

Report Summary

- **Problem:**

Legacy Systems are an invaluable information source
Need to find ways to leverage investments

- **Major Technical Challenges**

Understanding Legacy Systems

Acquire Knowledge

Represent and formalize Knowledge

Using the Knowledge

Assessing risk

WG#9: Reinvesting, not Reinventing Legacy Systems

Addressing the Challenges

Acquire the Knowledge

Novel Approaches :

- Conceptual “grep”
- Multifaceted Rationale Capture
- Domain Architecture Driven Behavioral Analysis
- Cross-Disciplinary Approaches

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Addressing the Challenges

Represent and Formalize Knowledge

- Human-Accessible Formal Representations
- Tool framework for Domain-Specific Knowledge Representation

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Addressing the Challenges

Uses for the Knowledge

- Transformation of the Legacy System
- Impact and Risk Assessment
- Composition

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Projected Outcome

- **Evolution Cost and Risk Reduction**
- **Taking advantage of lessons learned for forward engineering**
- **Year 3000 prevention**

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Investment Strategy

- **DARPA, Industry Support**
 - **Why DARPA?**
 - No more new fighter planes!**
 - Long-term return on investment needed**
 - **What other collaborations?**
 - Industry provides software testbeds**
- **What if we did not do this?**
 - Software Industry gets exported!**